



CALIFORNIA FUELS, LUBRICANTS, AND AUTOMOTIVE PRODUCTS PROGRAM REGULATORY OVERSIGHT REPORT

2012 – 2016



CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE



The Division of Measurement Standards would like to thank and acknowledge all those who compiled data, photographs, charts and tables, and contributed to the writing of this report:

Kristin Macey

Division Director

Kevin Schnepf

Environmental Program Manager, Fuels, Lubricants and Automotive Products Laboratory

Clark Cooney

Chief, Enforcement Branch

Allan Morrison

Sr. Environmental Scientist Supervisor, Fuels, Lubricants and Automotive Products Laboratory

John Mough

Sr. Environmental Scientist Specialist, Fuels, Lubricants and Automotive Products Laboratory

John Larkin

Supervising Special Investigator, Fuels, Lubricants and Automotive Products Program

Chris Lenert

Special Investigator, Fuels, Lubricants, and Automotive Products Program

Tricia Yu

Special Investigator, Fuels, Lubricants, and Automotive Products Program

Rebecca Bland

Staff Services Manager, Division Administrative Services Unit

Samuel Ferris

Environmental Scientist, Fuels, Lubricants and Automotive Products Laboratory

Andrea Alley

Supervising Special Investigator, Special Projects

On the front cover, clockwise from top: Time lapse of passing vehicles on a California freeway; Auto sampler tray for gas chromatography; Octane testing (antiknock) engine; Fuel measured for quantity requirements; Alternative fuels dispenser at a retail fueling station.

On the back cover, clockwise from top: Passing vehicles on a California freeway; FTIR instrument and three spectra of gasoline samples (overlaid and offset), Sacramento laboratory; Lubricant testing using an automatic viscometer.

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Division of Measurement Standards

Mission

We, as an important member of the California Department of Food and Agriculture, serve the people of California by aggressively preserving and defending the standards essential in providing the citizens a basis of value comparison and fair competition in the marketplace.

It is my pleasure to present this 2012-2016 report of the California Fuels, Lubricants, and Automotive Products Program. Here at the California Department of Food and Agriculture's Division of Measurement Standards, we take our mission seriously.

We strive to protect motorists who make fuel and other purchasing decisions at retail locations; it's something we can relate to since we are all consumers. We also take pride in the fact that our work promotes a level playing field and protects businesses competing for market share. We realize that profit margins are tight in the fuels industry, so we aggressively take action against anyone not in compliance with California law.

We champion all types of fuels and automotive products without favor to type or brand. We also welcome and embrace new types of alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies.

Lastly, we value the relationship we have with our stakeholders. Most of these bonds have been built over years of trust, hard work, and good working relationships. Our partners include the Western States Petroleum Association and the California Independent Oil Marketers Association, who have stood by us through legislative and regulatory changes, and whose members pay a motor oil fee which supports our program activities. We are indebted to our sister agencies, the California Energy Commission and California Air Resources Board, for their continued support of our efforts to address performance standards for new fuels. Our Division would be ineffective in a state the size of California without the assistance of our counterparts at each county department of weights and measures. County officials perform the bulk of advertising and labeling inspections for us at approximately 12,000 service stations throughout the state.

As you read this report, we hope you find it interesting and informative. If you have any questions or comments, please contact us at DMS@cdfa.ca.gov.



Kristin Macey, Director
Division of Measurement Standards
California Department of Food and Agriculture



In 1913, the State Legislature created the Office of the State Superintendent of Weights and Measures within the State Department of Weights and Measures to oversee the development of specifications, tolerances, and accuracy and correctness testing for weighing and measuring devices such as grocery, livestock, and railroad track scales; fuel dispensers; motor oil bottles and cans; and standardized weights and measures used in state hospitals and prisons.

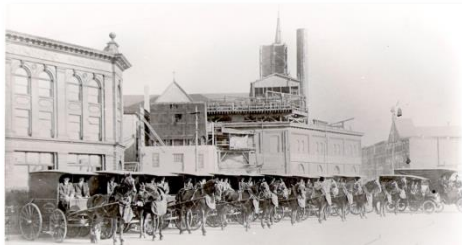


Photo 1: State and local officials, circa 1913

County officials became active in assisting the state by inspecting, adjusting, and sealing weighing and measuring equipment. Devices not meeting standard specifications were either corrected for accuracy and put back into operation or confiscated by the county official if it was determined to be faulty or illegally altered.



Photo 2: California Sealers of Weights and Measures, circa 1915

Legislation enacted in 1913 clarified the definition of net containers and safeguarded the public against potentially deceptive containers such as false bottom and solid glass bottom bottles. It also provided for the labeling standards of the net quantity of product in a container when offered for sale in California.



Photo 3: Bulk Gasoline Delivery, circa 1917

In 1921, the State Department of Weights and Measures was reorganized and the Office of the State Superintendent of Weights and Measures became part of the State Department of Agriculture and was renamed the Division of Weights and Measures.

The California Gasoline and Oil Substitution Act of 1931 protected the motoring public from the misrepresentation of gasoline, gasoline products, and lubricating oils. The Division of Weights and Measures was given authority to regulate and enforce minimum quality standards for gasoline and diesel fuels,



Photos 4 and 5: State officials dispensing gasoline and measuring fuel quantity using a volumetric prover (Seraphin)

gear oil, kerosene, and the price advertising and labeling of those products. As a result, a laboratory for testing the physical and chemical characteristics of gasoline, diesel, and various oils was created.

Between 1939 and 1948, the Division of Weights and Measures was reorganized as a bureau and placed first under the Division of Economics, then the Division of Marketing, and later under the Division of Compliance. Between 1950 and 1962, the Bureau of Weights and Measures was given additional responsibility to regulate and enforce engine coolant, brake fluid, and automatic transmission fluid.



Photo 6: Visible level gasoline pump, circa 1960s

In 1972, the Bureau of Weights and Measures was again reorganized as a division and renamed the Division of Measurement Standards (Division) and placed in the Department of Food and Agriculture (Department). Today, the Division administers several programs including Metrology; Type Evaluation; Measurement Device Compliance; Fuels, Lubricants, and Automotive Products; and Weighmaster Enforcement.

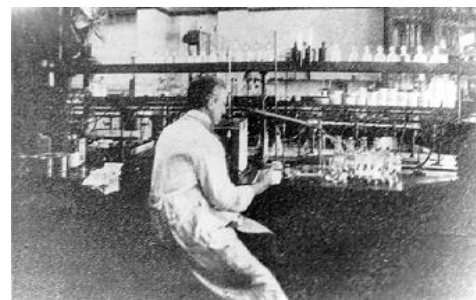


Photo 7: Mr. E.D. Griffith, Chemist in charge of the first state laboratory; testing gasoline samples



The Department of Food and Agriculture (Department) preserves and maintains California's legal standards of measurements and has authority over, and is responsible for, verifying product specifications, applying standardized test methods, and ensuring correct labeling and method of sale requirements of retail transactions. The Fuels, Lubricants, and Automotive Products Program (Program) within the Division of Measurement Standards (Division) has authority and responsibility under the Business and Professions Code (BPC), Division 5, Chapter 14 (Fuels and Lubricants) and Chapter 15 (Automotive Products) to establish regulations that enforce quality, performance, and labeling standards for motor vehicle fuels, lubricants, and other automotive products. Associated regulations are found in the California Code of Regulations (CCR), Title 4, Division 9, Chapters 6, 7 and 8.

California has over 28 million licensed drivers operating over 35 million registered vehicles. Californians consume 12.2 billion gallons of gasoline; 3.3 billion gallons of diesel; 110 million gallons of motor oil; 125 million gallons of lubricants; and 20 million gallons of engine coolant every year. Statewide, that encompasses approximately 12,000 retail refueling stations with over 250,000 fuel dispensers. On an annual basis the Program receives and investigates over 600 complaints, conducts surveys and surveillance, and collects

over 3,800 samples of various fuels and automotive products for laboratory analyses.

The Program also supports all 58 county departments of weights and measures by analyzing products sold in each of their jurisdictions. In turn, county officials assist the Program by conducting inspections, collecting samples, enforcing advertising, labeling, and method of sale requirements, responding to complaints, and following-up with enforcement activity.

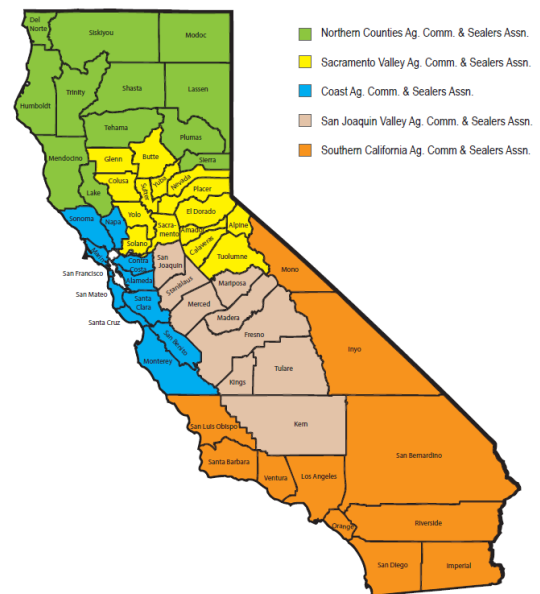


Figure 1: California counties coordinate with and implement Program activities

Source: California Agricultural Commissioners and Sealers Association (CACASA)

https://www.cdffa.ca.gov/exec/county/county_area_groups.html

General criteria for collecting product samples include:

- Random Surveillance,
- Marketplace Surveys,
- Consumer and Competitor Complaints, and
- Follow-up on Product Failures.



Photo 8: Multigrade fuel dispenser

The Program operates at three office locations in the state: Sacramento, Fresno, and Anaheim. It is made up of an Enforcement Unit with personnel assigned to each office, and two laboratories, at the Sacramento and Anaheim locations, to analyze fuels, lubricants, and automotive products.

The Program's regulatory and enforcement activities protect California consumers, business, and the vehicles they operate by ensuring motor vehicle fuels, lubricants, and other essential automotive products meet specifications and quality requirements.

Motor vehicle fuels, lubricants, and products that do not meet specifications are removed from sale, using a red tag titled CONDEMNED PRODUCT or orange tape with OFF SALE written on it, and appropriate enforcement



Photo 9: Prepackaged product not meeting specifications and placed off sale

action is taken. Enforcement of these standards creates a foundation for fair, transparent, and competitive trade in the marketplace. Retailers of such products can productively and profitably operate while California consumers and businesses purchasing those products have confidence they are correctly labeled, are of appropriate quality, and perform as expected.

Recent legislative and regulatory changes have increased the number of products the Division is mandated to regulate and enforce. To continue to serve and protect California businesses and consumers, Program personnel provide leadership in the research, development, preparation, and writing of legislative, regulatory, and policy proposals for the Department. In that capacity, personnel review and analyze proposed legislation and propose regulations essential for the Division to successfully fulfill its duties in the oversight of fuels, lubricants, and automotive products. Program expenditures of about 4%, predominantly personnel costs, are allocated to rulemaking activities but vary from year to year. The following are recent laws affecting Program responsibilities and activities:



Photo 10: California State Capitol
Source: By [2] - [1], CC BY-SA 3.0
<https://commons.wikimedia.org/w/index.php?curid=5252469>

AB 808 (Stats. 2015, Ch. 591)

- Revised existing definitions relating to petroleum and hydrogen fuels, deleted the use of the term “petroleum” throughout those provisions, and defined terms for various motor vehicle fuels available for sale in California.
- Amended BPC, Section 13446 and authorized the Department to establish interim specifications via rulemaking for alternative and renewable fuels until a standards development organization accredited by the American National Standards Institute (ANSI) formally adopts standards for each of those motor vehicle fuels.
- Revised provisions relating to the regulation of motor vehicle fuels and lubricants to include alternative fuels and relatively new or reformulated lubricants and automotive products not previously defined by the Department.
- Authorized the Department to adopt by reference portions of the latest version of the National Institute of Standards and Technology (NIST) Handbook 130, *Uniform Regulation for the Method of Sale of Commodities*.
- Authorized the Secretary of the Department to adopt interim standards for method of sale in the absence of national standards.
- Established dispenser labeling and street price signage requirements for all motor vehicle fuels sold at retail, and requires them to incorporate the correct unit of measure (i.e. the standard unit used to measure the physical quantity of a motor vehicle fuel) as adopted by regulation.
- Revised the classifications and specifications that lubricants such as engine oil, axle and gear oil, and automatic and manual transmission fluids are required to conform to.
- Redefined “automotive products” to include diesel exhaust fluid and glycerin-based engine coolants to reflect current automotive product technologies and requirements.

AB 1008 (Stats. 2015, Ch. 109)

- Amended section 216 of the Public Utilities Code exempting the ownership or operation of a retail compressed hydrogen motor fueling station from being classified as a public utility due solely to that ownership, operation, or sale. This law further enhanced and clarified the Department's authority over retail motor vehicle fuels in the state.

AB 1907 (Stats. 2014, Ch. 805)

- Specified the method of sale for Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) in California to be in units of gasoline gallon equivalent (GGE) and diesel gallon equivalent (DGE), respectively. AB 1907 also defined the GGE to mean 5.66 pounds of CNG, and DGE to mean 6.06 pounds of LNG.

Pre-Rulemaking Workshops and Proposed Regulatory Actions

- The Division conducted a Fuels, Lubricants, and Automotive Products pre-rulemaking workshop in 2016 to develop regulatory language to further refine, clarify, and make consistent the specifications, standards, advertising, labeling, and method of sale requirements for fuels, lubricants, and automotive products considering all the changes and revisions adopted by AB 808.
- The Division proposed regulatory language for natural gas as a motor vehicle fuel in 2016 to adopt quality specifications for natural gas when used as a motor vehicle

fuel. The proposed regulation is intended to provide consumers with easily understandable unit pricing of CNG and LNG motor vehicle fuels, enhancing direct comparison with the prices per gallon of gasoline or diesel fuel. The proposed regulation would also establish minimum fuel quality standards for natural gas when used as a motor vehicle fuel and clarify the Department's authority to sample and test these fuels to ensure their quality.

- The Division conducted a Commercial Sale of Electricity as a Motor Vehicle Fuel pre-rulemaking workshop in 2016 to develop regulatory language to amend Section 3.40. Electric Vehicle Fueling Systems – Tentative Code contained in NIST Handbook 44, *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*. The Department adopts that document by reference to establish specifications and accuracy tolerances for all commercial measuring devices including electric vehicle supply equipment (EVSE). The proposed regulations will provide for the legal retail sale of electricity as a motor vehicle fuel by the kilowatt hour.
- The Division adopted regulations in 2014 establishing specifications and tolerances for commercial hydrogen gas dispensing equipment and fuel quality standards for hydrogen used as a motor vehicle fuel.

For detailed information regarding Division rulemaking visit:

<https://www.cdfa.ca.gov/dms/regulations.html>

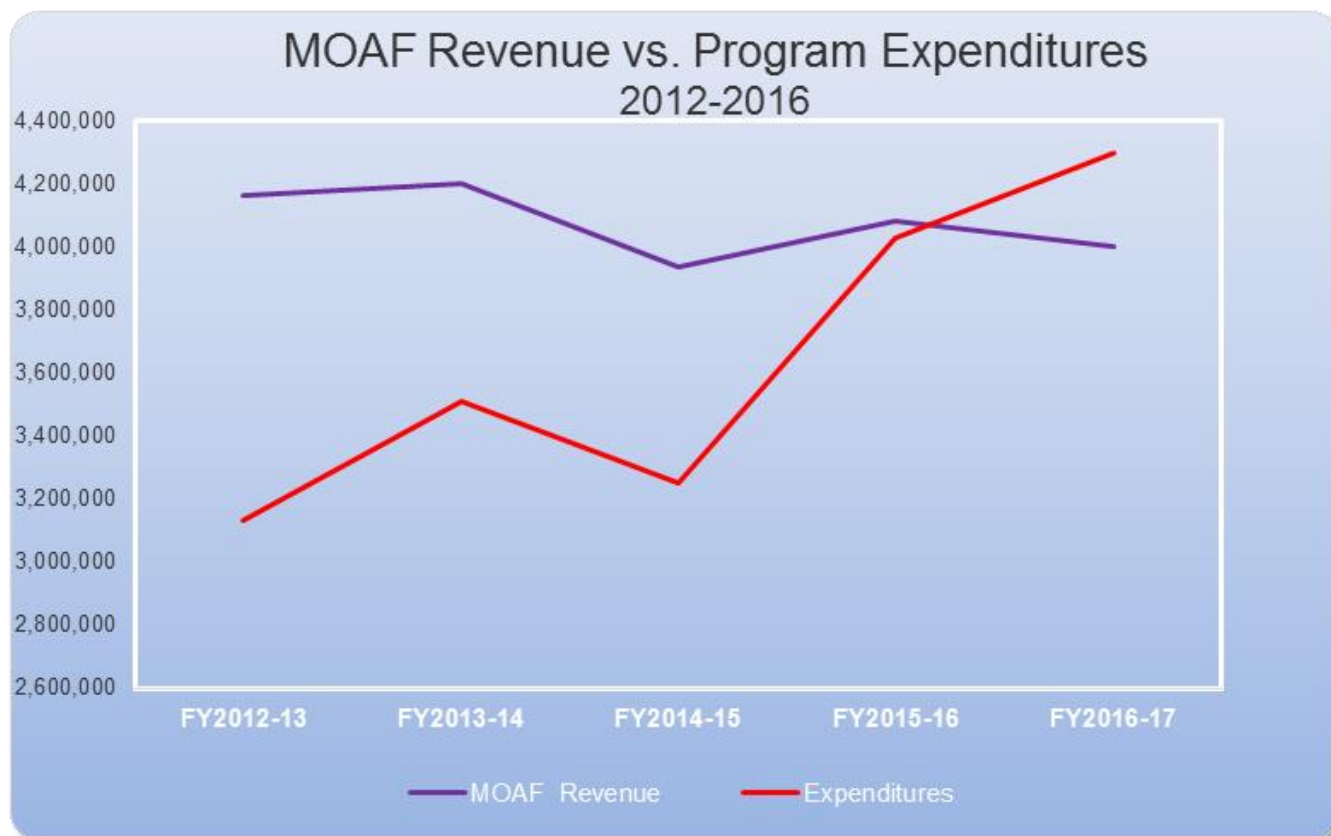


Figure 2: Comparison of the MOAF revenue and Program expenditures from 2012-2016

The Program's annual budget is approximately \$4 million. The budget is primarily funded through the motor oil assessment fee (MOAF) paid by businesses that manufacture, distribute, or import motor oil for sale in California. Such businesses are called motor oil dealers. The MOAF is currently set at \$0.04 cents per gallon of motor oil produced or sold in the state. Effective fiscal year (FY) 2016-17 the Department secured additional funding of \$1.1 million per year from the Cost of Implementation Fee Regulation, administered by the California Air Resources Board, in accordance with Health and Safety Code, Division 25.5, Part 7, Section 38597. That supplemental funding is ongoing and only to be allocated for the Program's implementation and improvement of alternative and renewable motor vehicle fuels (non-petroleum sourced). It is not to be used for its activities associated

with petroleum sourced products. That funding source only partially offsets the increased expenses of the specialized, costly, and time-intensive sampling and analyses of alternative and renewable motor vehicle fuels. Despite the additional funding, the Program is still experiencing a financial deficit of approximately \$1.1 million annually to implement all its regulatory, oversight, and enforcement responsibilities. That deficit is expected to grow in future years.

As seen in Figure 2, Program expenditures (red) from FY2012-13 through FY2016-17 have increased while MOAF revenue (purple), over the same period remained stagnant with a slight decline. Expenditures increased significantly since FY2014-15 mainly due to union contracts driving up personnel services costs, the acquisition of sampling equipment and testing

instrumentation, and a noted increase in the number of samples collected and tested each year. Each of those Program issues are addressed in more detail throughout this report. The Program has been able to offset some costs in previous years by securing and utilizing one-time, project-specific funding agreements with the California Energy Commission, California Air Resources Board, and other state agencies. Those temporary funding sources supported only some of the expanded responsibilities of the Program for specific research and activities related to motor vehicle fuels and the impacts of their use on climate change. These funding sources are not part of a long-term or permanent budgetary solution.

In accordance with the State Leadership Accountability Act, the Department must review its systems of internal controls and monitoring processes. In FY2016-17, the Program began contracting with the State Controller's Office to perform independent audits of approximately

15% of motor oil dealers each year to ascertain proper reporting and remittance of the MOAF. Implementing that project impacts the Program's expenditures by an additional 7%.

The Program Budget Expenditures pie chart, Figure 3, below illustrates various categories of Program expenditures by allocated percentage of the total budget. The greatest expenditures of the Program are personnel, indirect costs, and county inspections. The Program has experienced changes in both the quantity and job classifications of its personnel over the last four years, but has consistently committed no less than 40% of its annual budget to salaries and benefits; currently the Program allocates approximately 45% to that category. Indirect costs (overhead) and General Operations include administrative costs, supplies, and training provided to implement the Program. Combined, the Program allocates about 26% to those categories. Lastly, the Program allocates 15% per year for county officials to conduct inspections.

Program Budget Expenditures

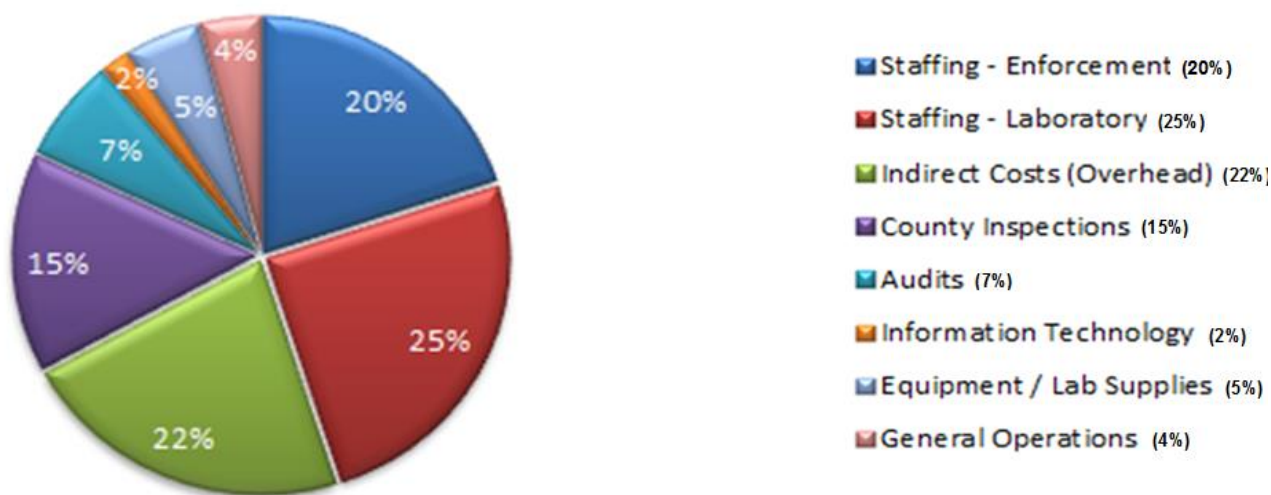


Figure 3: Pie chart of expenditures by percent of annual Program budget

Laboratory Information Management System

In collaboration with the Department's Information Technology Services, Program personnel have been systematically upgrading and consolidating multiple legacy databases into an integrated Laboratory Information Management System (LIMS).

The LIMS database was customized to accommodate the needs of the Program and is currently nearing the final testing phase before being fully implemented by the Program's two laboratories.

of its annual budget to information technology support. A portion of that pays for implementation and maintenance of LIMS.

The accuracy, productivity, and efficiency of the Program will be substantially improved by the coupling of LIMS with mobile technology able to transfer information over the Internet such as smart phones, electronic tablets, bar code scanners, and small printers made available to Program personnel to perform daily work activities.

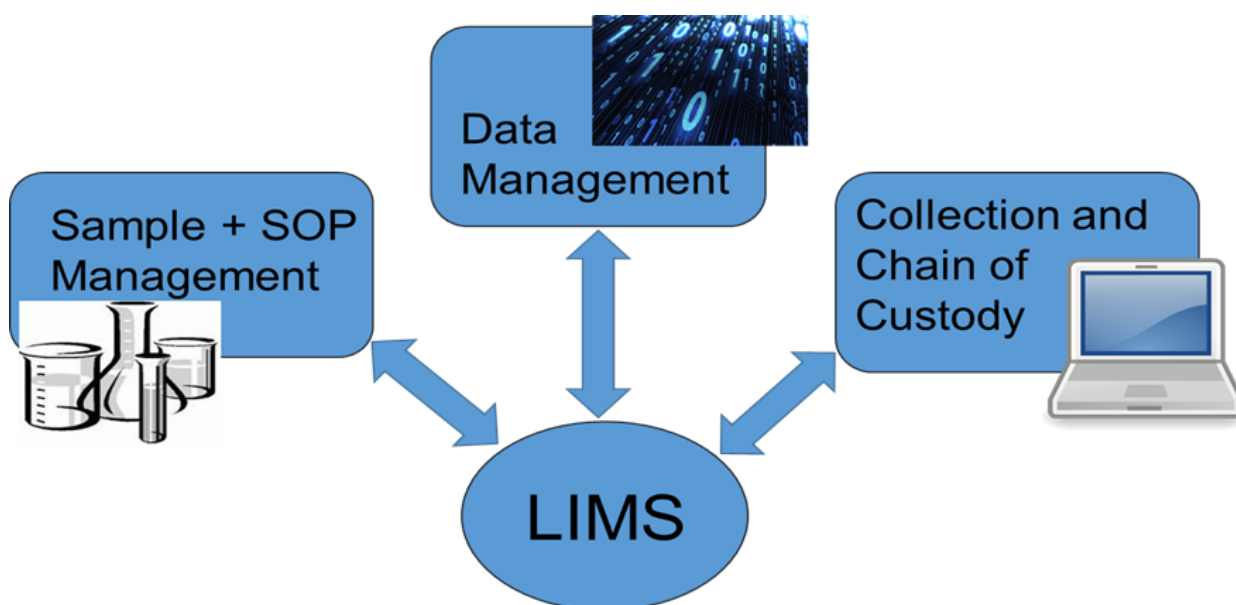


Figure 4: Flow of LIMS information management

When implemented, LIMS will improve the Program's data management process by better maintaining data consistency and integrity for each sample collected, consolidate all laboratory testing and analyses results, produce sample test reports, track complaint information, and save chemical inventory, investigation, and enforcement information into one web based application. In addition to initial set-up costs, the Program allocates about 2%

LIMS provides for more accurate and timely communication between field and laboratory personnel. Using LIMS and mobile technology, sample information can be inputted using a tablet at the time of sample collection.

In many cases the information can be uploaded to LIMS using the Internet. A bar coded label is printed onsite and affixed to the sample container to identify it.

Upon delivery to the laboratory, the bar code on the container is scanned and the information is uploaded into LIMS. Using the bar code label and scan gun the process of managing sample information will significantly reduce data entry time and transcription errors.



Photo 11: Hydrogen gas container with a LIMS generated bar code label

Additionally, LIMS provides an audit trail to track chain of custody, sample status, or any edits made to sample information. Organization and management of field and laboratory data is essential for the regulatory oversight of fuels, lubricants, and automotive products in the marketplace.

Prior to the use of a consolidated data management application, sample information was handwritten on an identification tag, multiple analysis worksheets, and sample test reports.

Laboratory personnel would then manually enter the data into one or more antiquated database programs that were not able to synchronize data between them.

Personnel Activity Management

LIMS has the capability to enhance the Program's oversight and documentation of personnel time and task reporting. When fully implemented, field and laboratory personnel will record their work activities electronically as the sample moves through the collecting and testing process. In addition to management of sample information, LIMS will also allow for managerial review of personnel time allocation, work assignments, and management of standard operating procedures (SOP) associated with sample collection and testing.

Payment Card Skimmer Training

Payment card “skimmers” are a major method of theft. Many are placed into retail motor fuel dispensers that can be installed in a matter of seconds. These devices are virtually undetectable to a consumer at the time they make a purchase and their card information can be instantly transmitted to the perpetrator. There are many types of skimming devices that are installed externally and internally.

Since January 1, 2016, the Division provided training on payment card skimmers to county sealers, their deputy sealers, and weights and measures inspectors. To date, 13 presentations have been given to 112 officials. Three presentations were offered via webinar.



Photo 12: External skimming device being installed on a fuel dispenser



Photo 13: External skimming devices

The presentations covered:

- The potential financial impacts to consumers, businesses, payment card issuing companies, and the added burdens to weights and measures officials and law enforcement.
- Identifying what skimmers look like, the various types, their basic function and transmission of consumers' payment card information, and where they are located within a fuel dispenser.
- The precautions consumers and businesses should take to protect themselves against identity theft and fraud.
- The actions Registered Service Agents (RSAs) should take if they locate a skimmer.
- The actions California weights and measures officials should take if they locate a skimmer.
- Assembly Bill 2307, effective January 1, 2017, requires RSAs to report skimmers they discover to weights and measures officials or law enforcement.
- New laws in affect and actions taken by other state weights and measures jurisdictions.

To help document skimmers that have been discovered by California weights and measures officials, the Division created a portal and database for entering skimmer information. The database allows the Division to track how many businesses have been inspected for skimmers; the number of skimmers discovered; the name and location of the business where a skimmer was discovered; the brand of retail fuel dispenser involved; and actions taken by the weights and measures official (e.g. photographs taken, what law enforcement agency was contacted, and if the skimmer was removed by the weights and measures official or law enforcement).



Photo 14: Skimming device installed inside a fuel dispenser cabinet

This training course is important because the deadline for retailers to install Europay, MasterCard, and Visa (EMV) chip readers on retail fuel dispensers has been delayed to October 2020.

The efforts and actions of the Division and county weights and measures officials are helping to protect consumers and businesses by raising awareness of that method of theft.



Photo 15: External keypad overlay skimmer

The Program allocates approximately 2-8% of its budget to provide various training courses, such as Payment Card Skimmer Training, to county officials and Program personnel each year.

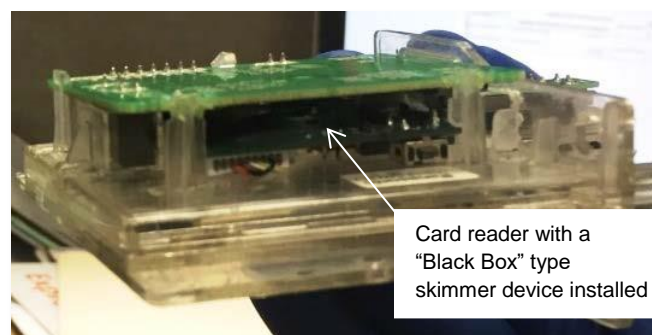
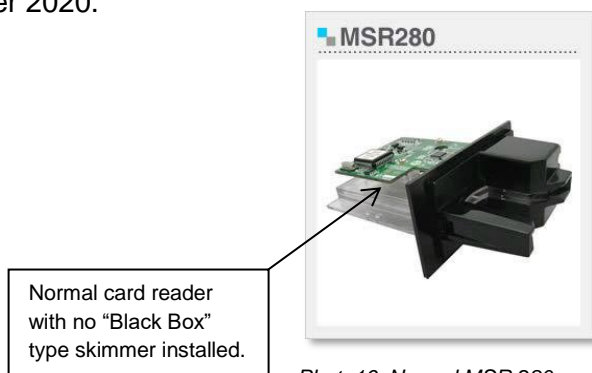


Photo16: Normal MSR 280 card reader on left. A tampered with MSR 280 card reader on right

Source: Boulder County Sheriff's Office Information Bulletin

<https://www.bouldercounty.org/safety/sheriff/news-and-information/news/>

Program Enforcement Unit

The Program's Enforcement Unit (Unit) is comprised of Special Investigators and Agricultural Technicians. Program personnel at those office locations provide a field presence in all 58 counties of the state.

The scope of fuels, lubricants, and automotive products reviewed by the Unit continues to expand with newly added products such as diesel exhaust fluid (DEF); different types and grades of motor oils and transmission fluids; and alternative fuels such as hydrogen and natural gas. The Unit also conducts marketplace surveys to monitor compliance on a comparative basis with surveys made during previous years.

As a routine operation, Unit personnel collect samples from randomly selected service stations, quick lubes, automotive repair shops, auto parts retailers, and other retailers of those products in the form of liquid or gaseous fuels, prepackaged product, and unpackaged bulk product. In addition to sampling products at retail business, Unit personnel may collect samples from fuel distribution facilities and refineries if the finished retail product is discovered to not meet specifications.



Photo 17: Microbial contamination in No. 2 diesel fuel

In cases when the sample product does not meet required test specifications, a Unit Investigator requires the store owner/operator to remove it from sale. Bulk sample violations are removed from sale and the whole tank, container, lot, or batch is sealed closed with a security seal (red tag) by a weights and measures official.

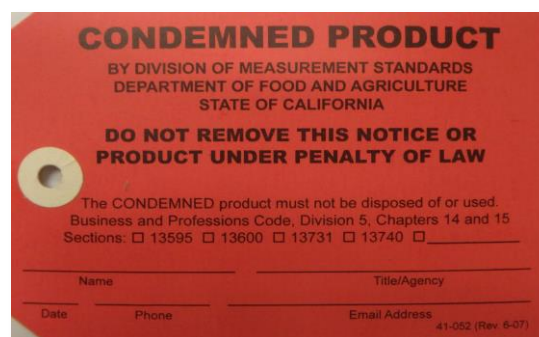


Photo 18: Red tag for condemned products

A Notice of Violation and product disposition letter are issued to the retailer and the manufacturer. The letter informs the owner/operator they must provide at least 24-hours written notice to the state investigator or county weights and measures official before properly disposing of the condemned product.



Photo 19: Compliant No. 2 diesel fuel on left. Adulterated No. 2 diesel fuel on right

California law authorizes only weights and measures officials to remove the security seal and witness the removal and final disposition of a product not meeting specification.

In cases involving egregious violations or cases of repeat offenses by the same owner/operator, the Program has the authority to and may initiate legal action in the form of an administrative fine, a civil penalty, or criminal charges. Violations are classified as misdemeanors and carry fines of up to \$1,000 per violation and/or six months in a county jail.



Photo 20: Various prepackaged lubricants and automotive products

In FY2015-16, the Unit collected 3,881 fuels, lubricants and automotive product samples of which 11% were not in compliance with product quality specifications. During the first two quarters of FY2016-17, Unit personnel collected 1,611 samples of which 13% did not meet the appropriate product quality specifications. The Program expends much more time and resources to initiate enforcement on non-compliant product than is spent collecting routine samples that meet specifications.

The Program contracts with county departments of weights and measures to perform nearly 7,000 inspections annually at retail locations where fuels, lubricants and automotive products are sold.

Inspections by county officials verify compliance with advertising and labeling laws, and the requirement for station operators to provide free air and water to customers that purchase gasoline or diesel fuel.

Unit personnel review county inspection reports and work with local county inspectors to ensure that uniform inspection and sampling methods are being followed throughout the state. As referenced in the Fiscal Summary of this report, approximately 15% of Program's budget reimburses each county department of weights and measures for their efforts.

The Unit also responds to a variety of complaints regarding allegations of fuel and automotive product quality and quantity (measuring devices), advertising, labeling, and the method of sale. Complaints are investigated by Unit personnel or are referred to the local county weights and measures

department for appropriate response. During FY2015-16, the Unit received 617 complaints. Those complaints included claims of poor fuel quality causing vehicle malfunction, fuel dispenser "meter creep" (when the dispenser indicates fuel delivery before the nozzle is activated), being charged more than the advertised price, and not receiving free air and water from the retail station.



Photo 21: Air pump placed out of service as the result of a complaint

Year	Air and Water Complaints	
	Investigated Complaints	Substantiated Complainants
2012	153	20%
2013	244	18%
2014	335	20%
2015	217	12%
2016	81	17%

Table 1: Investigated and substantiated air and water complaints by year

California law requires station operators to provide free air and water to customers that purchase motor vehicle fuel. Table 1 shows the number of free air and water complaints received by the Unit from calendar years 2012-2016 and the percent of complaints that were substantiated following an investigation by either county officials or Unit personnel.

The table shows that many less complaints were filed in 2016, yet the percentage of substantiated complaints remained comparable to prior years at about 17% of the total investigated.

Major Enforcement Case in FY2015-16

Based on an investigation conducted by the Unit in early 2016, the City of Los Angeles Office of the City Attorney brought six misdemeanor charges against the owners of a major retail brand service station for selling adulterated gasoline.

As seen in Photo 23, to the right, eight consumers purchased gasoline heavily contaminated with water, sediment, and oil that resulted in immediate vehicular failure while still at or in the vicinity of the service station.

At a press conference, the City Attorney stated, “We have brought this case because we allege that that which was sold to these customers and others could hardly be called gasoline.” To date, final disposition of that case is pending.



Photo 22: Underground storage tank sealed with a red tag to prevent new deliveries or removal of condemned product



Photo 23: Compliant gasoline on left. Adulterated gasoline on right

False Representation of Fuels, Lubricants, and Automotive Products

After a four-year investigation beginning in 2012 of a large petroleum products manufacturer, the Unit successfully obtained a permanent injunction prohibiting the further sale of various

non-compliant products within the state of California. That manufacturer falsely represented the specifications and grade type on the packaging labels of various fuels, lubricants and automotive products including, but not limited to, motor oil, gear oil, brake fluid, transmission fluid and engine coolant.

The Orange County District Attorney's Office filed civil action against that company for selling or offering for sale products having a different grade type than represented on the label and adulterated or mislabeled products that do not meet test specifications. That case was settled in December 2016.

Gas Rewards Scam

The Unit investigated multiple complaints that gas rewards cards issued by a major petroleum products company was not giving the discounted fuel price as advertised. After Unit investigators substantiated the allegations, multiple Northern California



Photo 24: Gas rewards window advertisement

county district attorney's offices filed civil action against that company for making deceptive, false, and misleading statements; engaging in false and misleading advertisement; and for committing unfair and fraudulent business practices. That case was settled in September 2016.

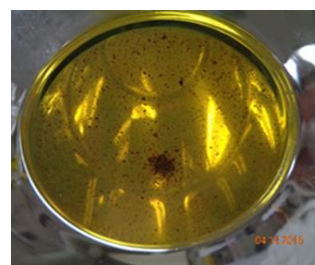
Recent Product Compliance Issues

During routine sampling in FY2015-16 throughout California, Unit personnel identified issues with the presence of sediment or water in the diesel fuel distribution and delivery network.



Photo 25: B20 fuel dispenser sealed and tagged for non-compliance

Those investigations resulted in Unit personnel removing various motor vehicle fuels from sale at several service stations due to the presence of sediment or water in the underground storage tanks (USTs) at those locations.



Photos 26 and 27: Diesel fuel contaminated with sediment

To address issues with water and sediment in diesel fuel, the Coordinating Research Council (CRC) issued Report 667, *Diesel Fuel Storage and Handling Guide*, and Report 672, *Preventative Maintenance Guide for Diesel Storage and Dispensing Systems*. Both reports discuss good management practices for keeping fuel clean and free of water. Those reports may be found at:

<https://crcao.org/reports/recentstudies2016/CRC%20672/CRC%20672.pdf>

The Program made those reports available to assist and educate service station owners with managing fuel quality concerns. County officials were also asked to relay this information to station owners to assist the Program's efforts to mitigate the presence of sediment and possible

bacterial growth that can occur in USTs contaminated with excessive water.

Each enforcement case requires additional Program time and resources. Many violations can be resolved immediately or in a matter of days without further enforcement activity. Others require years of investigation and litigation to settle. Nonetheless, the Program is required by law to allocate necessary funds, on a per case basis, to enforce the law, prosecute violators, and protect the interests and property of California consumers and businesses.

Complaints and questions about fuel sampling, laboratory analysis, and field enforcement can be directed to the Program Enforcement Unit at (916) 229-3000.

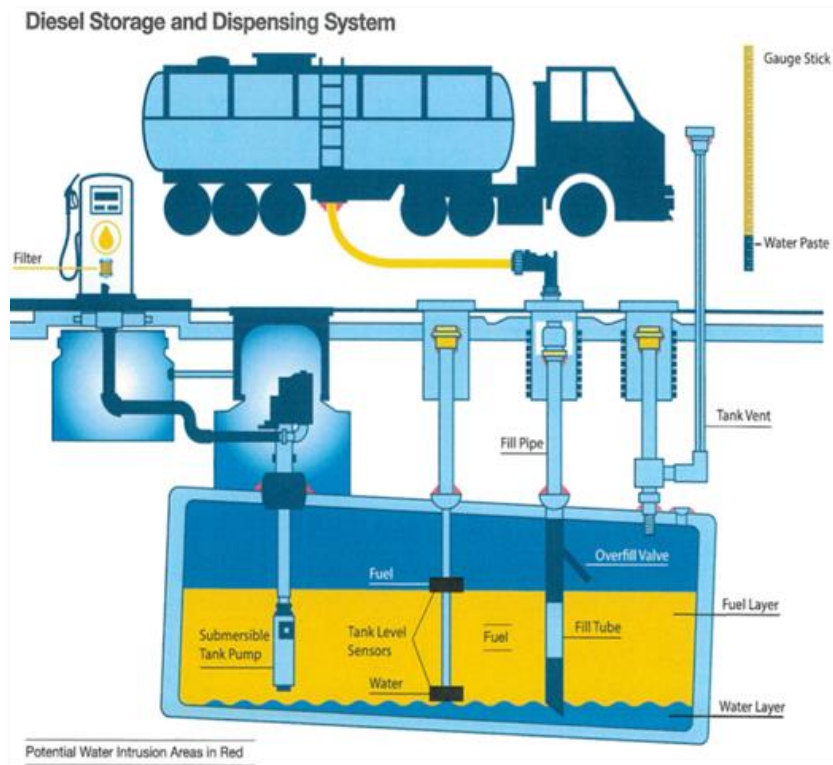


Figure 5: Fuel delivery diagram

Source: Coordinating Research Council Report 672, July 2016

Ensuring the quality of fuels, lubricants and automotive products throughout California and maintaining the reliability of such test data is a major undertaking for the Program's two laboratories. The laboratories perform quantitative and qualitative analyses on samples received from Unit personnel or county officials throughout the state. The purpose of testing those products is to determine if they comply with quality specifications and the product advertising and labeling requirements. The Program allocates 5% of its annual budget to laboratory equipment, instrumentation acquisition and maintenance, and consumable chemicals and supplies.



Photo 28: Fuel sample containers

Between the two laboratories, the Program is equipped with proper instrumentation and scientific personnel to analyze each automotive product listed below and their various grades, blends, and types:

- Fuels:
 - Gasoline
 - Diesel
 - Ethanol Flex Fuel
 - Biodiesel
 - Hydrogen, and
 - Dimethyl Ether
- Lubricants:
 - Motor Oil (petroleum and non-petroleum sourced)

- Gear Oil, and
- Transmission Fluid
- Automotive Products:
 - Engine Coolant/Antifreeze
 - Brake Fluid, and
 - Diesel Exhaust Fluid
- Other Products:
 - Kerosene
 - Fuel Oil

The Program acquired instrumentation for and will begin analyzing alternative fuels like methanol flex fuel, natural gas, and liquid petroleum gas in the future.

Product Specifications and Test Standards

Consensus standards for fuels, lubricants, and automotive products are established by bringing together producers, users, original equipment manufacturers, government members such as the Program's laboratory personnel, and



Photo 29: Various instruments for testing and analyzing fuels, lubricants, and automotive products

academia into committees, subcommittees, and working groups under guidelines established by ANSI accredited standards development

organizations, namely ASTM International or SAE International. Product specifications and test methods are developed based on the input of all the members involved, and are continually evaluated and updated as market needs and technology improve performance-based requirements.



As participants, laboratory personnel provide valuable information to develop, validate, or maintain national standards for fuels, lubricants and automotive products. The Program regularly participates with the National Conference on Weights and Measures (NCWM), ASTM International D02 and D03 committees, and SAE International hydrogen fuel and natural gas committees.

The Program allocates funds on an annual basis for personnel to participate and contribute to the development of many standards and specifications that affect its mandated activities.

To meet its legal requirement, the Department adopts by reference the latest quality standards established by ASTM International, SAE International, or other accredited ANSI organizations. The Department adopts the advertising, labeling, and method of sale

requirements for fuels, lubricants, and automotive products established by NCWM as published by the National Institute of Standards and Technology (NIST) in Handbook 130.

The standards adopted by ANSI organizations for motor vehicle fuels, lubricants, and automotive products are included in BPC, Division 5, Chapters 14 and 15. Regulations adopted by the Department for fuels, lubricants, and automotive products are written in CCR, Division 9, Chapters 6, 7, and 8.

Inter-laboratory Proficiency Testing Programs

Maintaining proficiency and consistency with laboratory test methods is essential to providing fair, unbiased, and equitable enforcement of product standards. In addition to routine regulatory testing of retail motor vehicle fuels, lubricants, and automotive products, Program laboratory personnel participate in ASTM International's inter-laboratory proficiency testing program and the Pacific Coast Regional Group testing program throughout the year. These programs assess the analytical results of the Program and other participating laboratories by comparing their data against average values of the test sample. The Program's laboratory methods and procedures are compared with others to assure they meet repeatability and reproducibility requirements of test methods.

Current Trends

The Program's laboratories have received and analyzed over 9,000 fuel, lubricant, and automotive product samples over the past four fiscal years. Figure 6 shows the majority of samples tested are gasoline, diesel fuel, and motor oil totaling over 8,000 of the more than 9,000 samples collected.

The number of samples analyzed by the Program's laboratories is representative of the approximate relative volumes of product sold, consumer complaints received, and overall compliance rates for each product. There were too few kerosene, DEF, and fuel oil samples taken in the last four years to report.

The total number of samples received and analyzed by the Program's laboratories increased markedly over the past couple years especially with diesel, motor oil and transmission fluid, as seen in Figure 7.

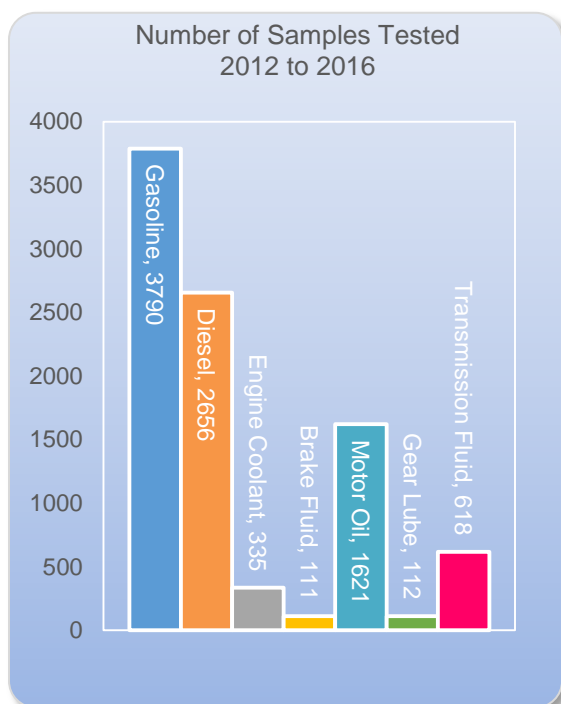


Figure 6: Bar graph of all sample types collected from 2012-2016

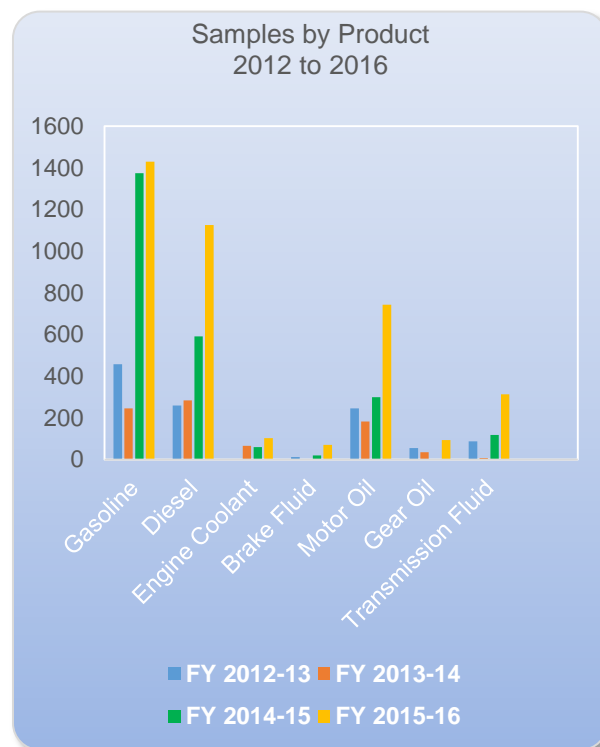


Figure 7: Number of sample types collected by fiscal year

Samples originate from routine and follow-up inspections on products not meeting specifications, consumer complaints, and marketplace surveys.

Origin	Sample Sources			
	FY 12-13	FY 13-14	FY 14-15	FY 15-16
Routine	682	446	2125	3291
Follow-up	291	285	211	443
Complaint	46	183	130	155
Survey	102	8	0	0
Total	1121	1023	2466	3889

Table 2: Samples collected from various sources

Table 2, on previous page, shows a 482% increased effort by the Program to collect and analyze routine samples since FY2012-13, and a 346% increase with all sample sources. As expected, that expended effort improved the Program's presence in the marketplace, yet significantly increased its expenditures in FY2015-16 while operating on nearly the same annual revenue as each of the four years prior.

It is concerning to note that despite the increased sampling and oversight, the Program has witnessed a decrease in overall compliance with diesel fuel, brake fluid, and transmission fluid between FY2014-15 and the first half of data reported for FY2016-17, as seen in Table 3. Although the data reported for FY2016-17 only includes the first half of the fiscal year (July 1, 2016, to December 31, 2016), the overall compliance rates of those product types are continuing to show a downward trend.

Recent Trends in Product Compliance Rates					
Product	FY 14-15	FY 15-16	% Change FYs 2014-2016	FY 16-17*	% Change FY 16-17*
Gasoline	98.7%	99.5%	0.8%	99.6%	0.1%
Diesel	92.7%	89.6%	-3.1%	66.8%	-22.8%
Engine Coolant	61.7%	66.4%	4.7%	94.4%	28.1%
Brake Fluid	26.3%	64.8%	38.5%	42.9%	-21.9%
Motor Oil	88.6%	65.3%	-23.3%	78.5%	13.2%
Gear Lube	n.a.	76.2%	n.a.	100.0%	23.8%
Transmission Fluid	50.0%	72.8%	22.8%	66.3%	-6.5%

Table 3: *FY 16-17 trend data is for only the first two fiscal quarters

Conversely, the Program experienced consistently high compliance rates over the last four years with retail gasoline samples, and significantly improved compliance rates with engine coolant and gear lube. The Compliance rates of motor oil, and transmission fluid have fluctuated throughout the years due primarily to labeling and advertising violations.

Some examples of violations found by Program laboratory personnel are: water, sediment, and overall workmanship; low flash point; boiling point; viscosity; and labeling requirements. The Program is beginning to collect more data for relatively new automotive products like diesel exhaust fluid and alternative fuels like hydrogen and natural gas. Currently, that data is too limited to report at this time.

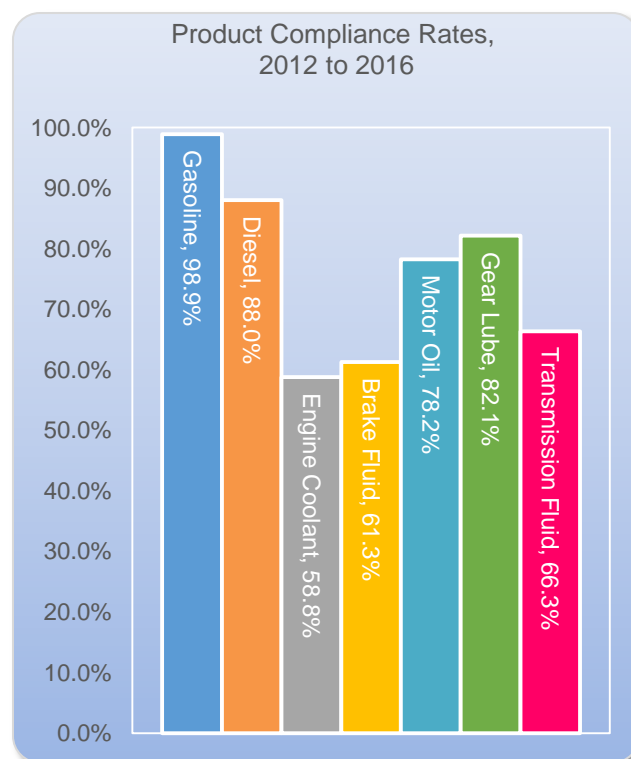


Figure 6: Bar graph of overall compliance rates by product type from 2012-2016

The Program is a critical part of the Division's mission to help prevent fraud or misrepresentation regarding the sale of motor vehicle fuels, lubricants, and automotive products. As additional motor vehicle fuels and automotive products are added to the Program, its scope of authority and responsibility evolves and expands to meet the challenges facing California of energy security, climate change, and environmental protection.



Photo 30: Hydrogen fuel dispenser

Several executive orders and legislative measures have been issued to mitigate those challenges. In 2005, Governor Schwarzenegger's Executive Order S-3-05 mandated a reduction in California's greenhouse gas emissions to 80% below 1990 levels by 2050 (the "80in50" target). The transportation sector generates more than one-third of the state's greenhouse gas emissions. To meet the "80in50" goal it will require changes in the variety of motor vehicle fuels offered for sale in the marketplace and an

overall, drastic decrease in the quantity of petroleum sourced fuel types purchased in California.

As a first step in accomplishing that goal, in 2006, Assembly Bill 32, (Núñez, Chapter 488, Statutes of 2006), the California Global Warming Solutions Act, required a reduction of the state's greenhouse gas emissions to 1990 levels by 2020. In addition, Executive Order S-1-07 issued on January 18, 2007, the Low Carbon Fuel Standard, called for a reduction of at least 10% in the carbon intensity of California's transportation fuels by 2020.



Photo 31: Instrument used to analyze diesel exhaust fluid

More recently, in 2012, Governor Brown issued Executive Order B-16-12 that set a target of 1.5 million zero emission vehicles in California by 2025, displacing a minimum of 1.5 billion gallons of petroleum fuels each year. To support that goal, the Executive Order directs that an infrastructure and refueling network of retail stations supporting the use of over one million zero emission vehicles be put in place and operational by 2020.

As part of that effort, California has invested in the construction of an expanded network of hydrogen refueling stations for fuel cell vehicles. Program personnel worked with an SAE International committee to develop a consensus fuel quality specification for hydrogen.

The Division also worked through the National Conference on Weights and Measures to establish the specifications and tolerances for dispensing devices that measure hydrogen gas for retail sale as a motor vehicle fuel.



Photos 32 and 33: Gas chromatography instruments used to test various fuel types

Laboratory methods to support enforcement of the hydrogen fuel specification were developed and tested by Program staff under contract with the California Energy Commission.

As a result of those laws and executive orders, other non-petroleum/low-carbon transportation fuels such as biofuels, dimethyl ether, and natural gas are being introduced for retail sale in California.

The use of such alternative and renewable fuels will continue to expand in the coming years to meet the Governor's goals and mandates. To protect consumers from products that do not meet specification and ensure a level playing field for producers and retailers, the Program will continue to enforce quality specifications, labeling, and advertising regulations. California motorists and businesses deserve that protection regardless of fuel type.



Photo 34: Fuel cell vehicle concept car

Source: Toyota – USA Newsroom

<http://toyotanews.pressroom.toyota.com/releases/2014+consumer+electronics+show+fcv+carter.htm>

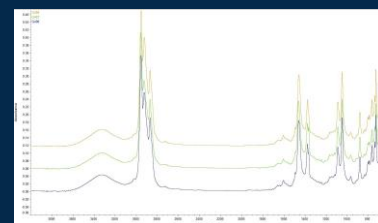
For more than 80 years the Program has regulated traditional motor vehicle fuel types such as gasoline and diesel. However, in recent years those fuels have been engineered into different formulations and other fuel types that require more costly, complex analyses to verify fuel quality specifications. Similarly, traditionally regulated lubricants and automotive products such as motor oil, transmission fluid, and engine coolants have been engineered into other formulations and new types that require additional and more complex analyses than before. Those additional products also consume Program resources to regulate and enforce the advertising, labeling, and method of sale requirements.

The Program primarily operates using revenue from the MOAF. It has maximized its use of those funds in the last four years to regulate and enforce the expanding variety of fuels, lubricants, and automotive products sold in California. During the last four years legislation and regulations broadened the Program's scope of authority and added many more fuel types, reformulated lubricants, and relatively new automotive products to its mandated responsibilities.

Consequently, Program expenditures have consistently risen since 2012 while Program revenue has remained nearly the same. In the last four years the Program has been implementing LIMS, a consolidated, web based data management system, developed and provided training courses for Program personnel and county officials, tested and analyzed over 9,000 product samples, and initiated appropriate enforcement against retailers of non-compliant products.

As the matrix of fuels available for retail sale in California changes to meet future goals, so will the need for the Program to improve and implement regulation and enforcement of a greater variety of fuels, lubricants, and automotive products.

The Program has aligned itself with the Governor's goals and is poised to continue to offer a presence in the marketplace to ensure a fair, competitive, and transparent mode of trade for both consumers and retailers of those products.



CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE